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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,902	12/17/2001	Rebecca E. Cahoon	BB-1373	6154

7590 12/31/2003

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EXAMINER

BUI, PHUONG T

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 12/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/018,902

Applicant(s)

CAHOON ET AL.

Examiner

Phuong T. Bui

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-37 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 25-28 and 31-37 is/are rejected.
- 7) ☒ Claim(s) 29 and 30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3/5/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

DETAILED ACTION

1. The Office acknowledges the receipt of Applicant's restriction election filed November 26, 2003. Applicant elects Group I and Invention B (SEQ ID NO:3 encoding SEQ ID NO:4) without traverse. Claims 25-37 are pending and are examined in the instant application. This restriction is made FINAL.

Sequence Listing

2. Applicant's CRF and paper sequence listing have been entered. However, upon examination of SEQ ID NO:3 and its corresponding amino acid sequence SEQ ID NO:4, it is unclear what region of SEQ ID NO:3 encodes SEQ ID NO:4. Clarification is required.

Information Disclosure Statement

3. An initialed and dated copy of Applicant's IDS form 1449, filed March 5, 2002 is attached to the instant Office action.

Claim Rejections - 35 USC § 112, first paragraph

4. Claims 25-28 and 31-37 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the **written description** requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims reciting 80-95% sequence identity lack adequate written description because Applicant does not disclose a representative number of species as encompassed by these claims. The claims encompass mutants and allelic variants and thus imply that structural variants

exist in nature, yet no structural variant has been disclosed. The claims also encompass Glu-tRNA reductases from other species. The implication is that there is a gene and a protein other than that disclosed which exists in nature, but the structure thereof is not known. Applicant discloses a single sequence SEQ ID NO:3 isolated from corn. Thus, there is insufficient relevant identifying characteristics to allow one skilled in the art to predictably determine such mutants, allelic variants and Glu-tRNA reductases from other plants and organisms, absent further guidance. Accordingly, there is lack of adequate description to inform a skilled artisan that applicant was in possession of the claimed invention at the time of filing. See Written Description guidelines published in Federal Register/ Vol.66, No. 4/ Friday, January 5, 2001/ Notices; p. 1099-1111.

5. Claims 25-28 and 31-37 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for SEQ ID NO:8 and a nucleic acid sequence encoding SEQ ID NO:9, does not reasonably provide enablement for nucleic acid sequences having 80-95% sequence identity to SEQ ID NO:4 at the amino acid level. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The breadth of the claims encompasses sequences having unspecified deletions, additions, substitutions and combinations thereof while maintaining Glu-tRNA reductase activity. Neither the state of the prior art nor Applicant provided guidance as to which regions of SEQ ID NO:3 or a sequence encoding SEQ ID NO:4 must be retained for activity, and which regions can tolerate mutations. Applicant provided no working examples of sequences having 80-95%

sequence identity. While one skilled in the art can readily make mutations to SEQ ID NO:3 or a sequence encoding SEQ ID NO:4, further guidance is required as to which mutations would be tolerated. Absent of such guidance, one skilled in the art cannot make and use the claimed invention as commensurate in scope with the claims without undue experimentation.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayashiki et al. (Plant Phys., Vol. 117:332, Plant Gene Register PGT 98-080, Nucleotide sequence of a cDNA clone encoding Glutamyl-tRNA Reductase from Rice, 1998 (Applicant's IDS)). Since SEQ ID NO:3 encoding SEQ ID NO:4 was not disclosed in provisional application 60/146600, Applicant has priority benefit of the filing date of July 28, 2000. Nakayashiki teaches a sequence having 91.3% sequence identity with SEQ ID NO:4 encoding a rice glutamyl-tRNA reductase. Even though Nakayashiki does not teach a degenerate nucleic acid sequences of the rice sequence, it would have been *prima facie* obvious at the time the invention was made to generate degenerate nucleic acids from the amino acid sequence taught by Nakayashiki for the purpose of expressing rice glutamyl-tRNA reductase, as degenerate codons for each

Art Unit: 1638

amino acid were known in the art. One skilled in the art would have been motivated to do so with a reasonable expectation of success.

8. Claims 25-27 and 31-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakayashiki et al. (Plant Phys., Vol. 117:332, Plant Gene Register PGT 98-080, Nucleotide sequence of a cDNA clone encoding Glutamyl-tRNA Reductase from Rice, 1998 (Applicant's IDS)), as applied to claims 25-27 above, and further in view of Goodman (USPN 4956282 (A)). The teachings of Nakayashiki have been discussed above. Nakayashiki does not teach vector, DNA construct, method for transforming cell, cell, method for producing a plant, plant and seed containing the degenerate nucleic acid sequence encoding glutamyl-tRNA reductase. Goodman teaches the vector, DNA construct, method for transforming cell, cell, method for producing a plant, plant and seed containing and expressing a heterologous DNA sequence. It would have been *prima facie* obvious to one skilled in the art at the time the invention was made to express the glutamyl-tRNA reductase of Nakayashiki using the plant expression method of Goodman with a reasonable expectation of success.

Remarks

9. Claims 29-30 are objected to as being dependent on a rejected claim but would be allowable if rewritten in independent form. The Office interprets the recited Clustal V method of alignment uses the default parameters set forth on page * of the specification. SEQ ID NO:3 encoding SEQ ID NO:4 is free of the prior art.

10. Papers relating to this application may be submitted to Technology Sector 1 by facsimile transmission. Papers should be faxed to Crystal Mall 1, Art Unit 1638, using fax number (703) 308-4242. All Technology Sector 1 fax machines are available to receive transmissions 24 hrs/day, 7 days/wk. Please note that the faxing of such

Art Unit: 1638


papers must conform with the Notice published in the Official Gazette, 1096 OG 30, (November 15, 1989).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Bui whose telephone number is (703) 305-1996.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Amy Nelson, can be reached at (703) 306-3218.

Any inquiry of a general nature or relating to the status of this application should be directed to the receptionist whose telephone number is (703) 308-0196.

Phuong Bui
Primary Examiner
Group Art Unit 1638
December 26, 2003


PHUONG T. BUI 12/26/03
PRIMARY EXAMINER